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Cc: Albright, David[Albright.David@epa.gov]
From: Rao, Kate
Sent: Fri 2/27/2015 8:05:49 PM
Subject: UICs desk/web statement (with fixed typos)

Full-text statement and Qs/As on EPA R9 UICs program review [website](#):

EPA's Review of California's Underground Injection Control (UIC) Program

The State of California was delegated primary responsibility for implementing the Class II oil and gas underground injection control (UIC) program of the federal Safe Drinking Water Act (SDWA) in 1983. As a part of its oversight role, EPA audited California's Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) Class II UIC primacy program in 2011 and identified substantial implementation deficiencies. In 2012, EPA conducted a review of aquifer exemptions that raised questions about the alignment of injection wells with EPA-approved exemption boundaries. On July 17 and December 22, 2014, EPA sent letters to DOGGR and the Water Resources Control Board (Water Board) (collectively, the State) highlighting concerns, providing direction and requesting information about DOGGR's implementation of its underground injection control program for oil and gas-related Class II wells. EPA's letters responded to DOGGR's lack of progress in addressing these issues over the prior two years. EPA has been meeting regularly with senior officials with the Department of Conservation, DOGGR, the Water Board and the Central Valley Regional Water Board to discuss the State's implementation of the Class II UIC program, the identification of Class II injection wells that may be injecting into non-exempt aquifers, the State's ongoing assessment of drinking water sources that may be impacted by improper injection, and to establish an effective process for reviewing and approving aquifer exemptions in California. EPA's December 22 letter directed the State to submit a Program Revision Plan by February 6, 2015, providing for full compliance with the SDWA by February 2017. EPA received a copy of the State's Program Revision Plan on February 6, 2015. EPA will work with the State to ensure that the plan contains actions that will bring their program into compliance with the SDWA.

Questions and Answers

What is an Aquifer Exemption?

An aquifer exemption is an action by EPA to remove an aquifer or a portion of an aquifer from protection as an underground source of drinking water under the Safe Drinking Water Act.

What criteria does EPA use to evaluate Aquifer Exemptions?

EPA is responsible for the final review and approval of all aquifer exemption requests, based on the regulatory criteria in 40 CFR 146.4. UIC permit applicants that seek an aquifer exemption in order to conduct injection activities typically delineate the proposed exempted area and submit a package, including supporting data, to the primacy agency. States with primacy, like California, review the application and, if the information submitted supports a determination that an aquifer exemption is warranted, propose to exempt the aquifer, provide for public participation, and submit a request for approval of the exemption to EPA. EPA must follow the regulatory criteria of 40 CFR 146.4 in making aquifer exemption determinations. For EPA to approve an aquifer exemption, the Agency must first find that the state, or where EPA directly implements the UIC program, the applicant, has demonstrated that the aquifer or the portion of an aquifer sought for exemption does not currently serve as a source of drinking water. The second exemption criterion requires EPA to determine either that the aquifer cannot now, or will not in the future, serve as a source of drinking water, or that the total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and is not reasonably expected to supply a public water system. The regulations at 146.4(b) describe four potential reasons for making the determination that the aquifer cannot now and will not in the future serve as a source of drinking water. One reason is that the aquifer is mineral, hydrocarbon, or geothermal energy producing, or can be demonstrated as part of a permit application to contain minerals or hydrocarbons that are expected to be commercially producible. The other reasons relate to the practicality and cost of accessing and treating the water for human consumption.

What is being done to determine the safety of ground water in the areas the State is reviewing?

When the State determined that there were wells injecting Class II fluids into aquifers that are not exempt, they immediately began to collect and evaluate data on the aquifers and nearby drinking water and irrigation wells to assess any potential threat to human health and potential impacts to water supplies. State agencies, including DOGGR, the State Water Board, and Regional Water Boards remain in the lead role for carrying out this assessment. EPA has requested that the State continue to provide updates of its assessment of whether any drinking water wells are at risk from Class II injection wells, and directed the State to address any threats to drinking water wells through emergency orders, permit rescission, or other appropriate means.

What is the importance of TDS levels in water?

Salinity is a measure of the amount of dissolved particles and ions in water. A common measure of salinity is the level of total dissolved solids (TDS). TDS is generally expressed in units of mg/l (milligrams per liter) or ppm (parts per million). In expressions of TDS levels, milligrams per liter (mg/l) and parts per million (ppm) are equivalent units. Salinity levels can result from hundreds of different ions, but a few make up most of the dissolved material in water: chloride and sodium, followed by calcium, nitrate, magnesium, bicarbonate and sulfate. The higher the salinity level of water, the less likely it is to be used for purposes such as drinking and other beneficial uses. As a general rule, aquifer TDS levels increase with depth. Below is some information about water with different TDS levels:

- Precipitation: 10 ppm
- Freshwater lake: 10-200 ppm
- Agricultural impact to sensitive crops: 500 ppm
- California drinking water limit - secondary max contaminant level (taste/odor): 1,000 ppm (max)

- ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ EPA's regulatory definition of an Underground Source of Drinking Water (USDW): 10,000 ppm
- ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Brackish: 23,000 ppm
- ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Seawater: 35,000 ppm

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